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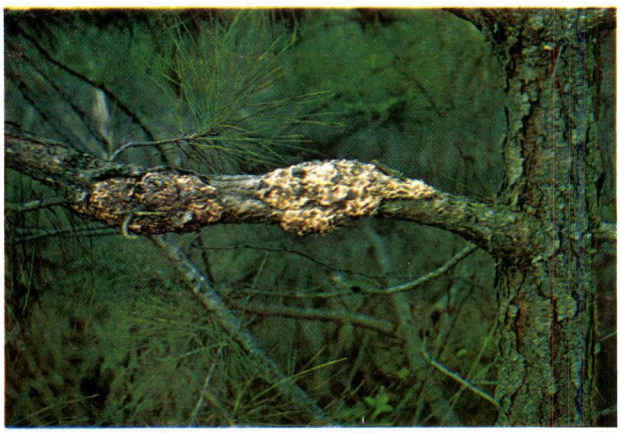


FLORIDA FUSIFORM RUST SURVEY 1971

U.S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

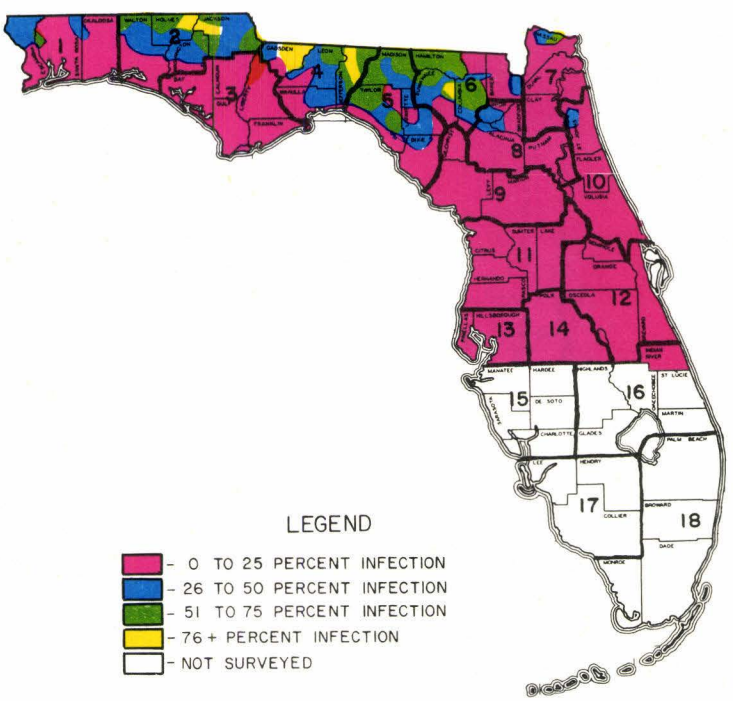
SOUTHEASTERN AREA

STATE AND PRIVATE FORESTRY

In cooperation with

FLORIDA DIVISION OF FORESTRY

FLORIDA DEPARTMENT OF
AGRICULTURE AND
CONSUMER SERVICES


LEGEND
- 0 TO 25 PERCENT INFECTION
- 26 TO 50 PERCENT INFECTION
- 51 TO 75 PERCENT INFECTION
- 76+ PERCENT INFECTION
- NOT SURVEYED

A SURVEY FOR FUSIFORM RUST IN FLORIDA

Elmer R. Roth and Charles W. Chellman [1/]

ABSTRACT

A fusiform rust survey was conducted in Florida during March and April 1971. The State was grided at 10 mile intervals, east-west and north-south. A plantation was sampled in the 8 - 12 year age class, that was located at or near the intersection of the grid lines. The survey was accomplished by the ratio estimation statistical method using only three rows as the sample. A map showing infection intensity was prepared from the field data. Counties south of Alachua and Putnam had less than 12 percent infection in the plantations sampled.

According to the 1952 Timber Resources Review, fusiform rust of southern pine causes more than a ten million dollar loss annually in saw timber and 97 million cubic feet in growing stock. The incidence of rust is intensifying in areas where slash and loblolly pine has been planted on former longleaf sites. As the supply of seedlings showing resistance to fusiform rust is limited, it is important that areas of high infection potential is known, so that the resistant seedlings can be planted on these areas and the more susceptible seedlings planted on areas where infection potential is not as great. No attempt has been made to make a southwide survey for fusiform rust since 1939 (1). The University of Florida, Cooperative Tree Improvement Group, has completed a fusiform rust survey in slash pine in plantations of their cooperators in north Florida, south Georgia and southern South Carolina. Recently Yandle and Roth (2) developed a sampling method whereby pine plantations can be sampled by tallying infection on as few as 3 randomly selected rows in a plantation. In this method, both stem and branch cankers are recorded.

A survey using the above method was begun in Florida on March 2, 1971, and completed April 30, 1971. All of the State lying north of

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1/ Respectively, Staff Pathologist, Division of Forest Pest Control, Southeastern Area, U.S. Forest Service and Entomologist, Florida Forest Service.

Manatee, Hardee, Okeechobee and Indian River Counties was surveyed. That part of the State to be surveyed was laid off on county maps using 10 mile square grids with lines running north and south and east and west. In the actual survey a plantation in the correct age group (8 - 12 years) was selected for sampling. With few exceptions, all of the plantations sampled in Florida were slash pine. The plantation to be sampled was the one of the correct age, closest to where the grid lines crossed, and not over 5 miles from this point. Plantations less than 5 acres in area, and those which had been previously pruned or thinned, were not considered.

After selecting the plantation to be sampled, the rows were quickly counted and the three rows to be sampled were chosen by using a table of random numbers. The selected rows were then sampled indicating whether the trees were healthy, had a stem canker, had a branch canker, had both stem and branch cankers, or had been killed by fusiform (figure 1).

After the data was collected for each of the counties surveyed, it was analyzed by the Environmental Protection and Improvement Unit, Southeastern Area. The preliminary analyses consisted of determining the percentage of infection for each plantation sampled. Using these percentages of infection, a map was developed (figure 2) showing areas of infection as 0 to 25 percent, 26 to 50 percent, 51 to 75 percent and 76 plus percent. Table 1 shows the number of plantations sampled in each county and the range of infection for the plantations sampled. Counties in Districts 15, 16, 17, and 18 were not surveyed because of extremely low rust hazard.

It is the opinion of the management foresters in the State organization that areas with less than 50 percent infection (includes both stem and branch cankers) can be successfully managed for pulpwood, timber, and pole products. Where infection is greater than 50 percent these areas should be given special consideration. In areas of heavy infection, foresters should consider planting seedlings that have shown resistance to the rust.

Physical completion of the survey was accomplished by personnel of the Florida Division of Forestry (County Foresters and Rangers). A series of training sessions were conducted for the State personnel by the Environmental Protection and Improvement Unit, Southeastern Area, State and Private Forestry.

The Florida Division of Forestry did an excellent and efficient job in collecting the data. This project was completed in a short time without unduly interfering with their normal workload.

PLOT DATA WORK SHEET - FUSIFORM RUST SURVEY

Data By _____ Date _____ Row # _____

Species _____ Age _____ Av. dbh _____ Av. Ht. _____

Location: State _____ County _____ Locality _____

Trees -Healthy			Trees-Diseased			Total Trees		
1			35			69		
2			36			70		
3			37			71		
4			38			72		
5			39			73		
6			40			74		
7			41			75		
8			42			76		
9			43			77		
10			44			78		
11			45			79		
12			46			80		
13			47			81		
14			48			82		
15			49			83		
16			50			84		
17			51			85		
18			52			86		
19			53			87		
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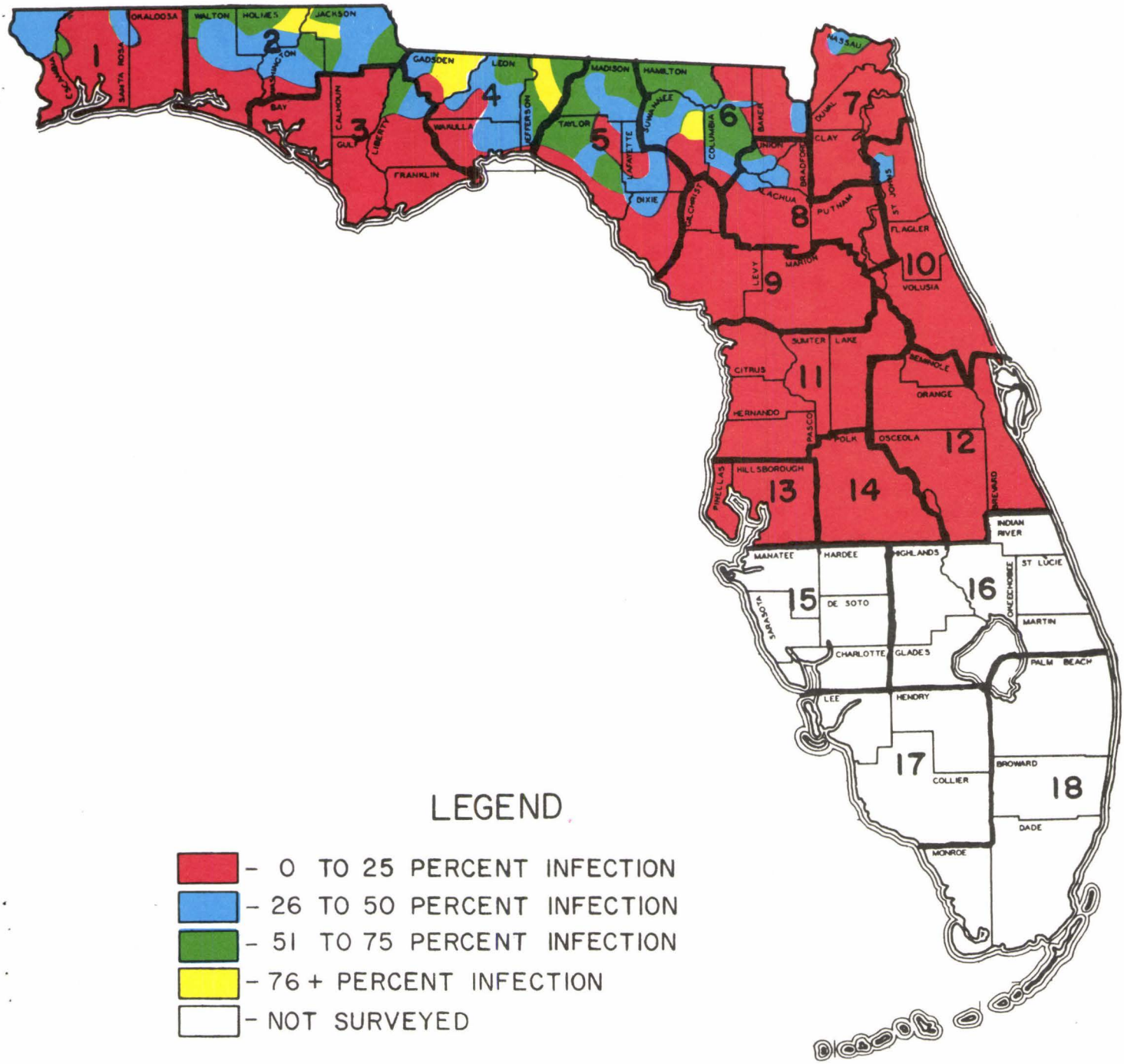
22			56			90		
23			57			91		
24			58			92		
25			59			93		
26			60			94		
27			61			95		
28			62			96		
29			63			97		
30			64			98		
31			65			99		
32			66			100		
33			67					
34			68					

H=Canker Free S=Stem Canker B=Branch Canker
SB=Stem & Branch Canker SF=Dead Fusiform

REMARKS:

Figure 1. Plot data work sheet - Fusiform Rust Survey

FLORIDA FUSIFORM RUST SURVEY - 1971



LEGEND

- 0 TO 25 PERCENT INFECTION
- 26 TO 50 PERCENT INFECTION
- 51 TO 75 PERCENT INFECTION
- 76 + PERCENT INFECTION
- NOT SURVEYED

TABLE 1

FLORIDA FUSIFORM RUST SURVEY - 1971

County	Number of Plantations	Range of Infection	County	Number of Plantations	Range of Infection
Alachua	8	6 - 27	Leon	6	12 - 54
Baker	4	4 - 42	Levy	5	0 - 11
Bay	5	1 - 12	Liberty	6	2 - 68
Bradford	3	5 - 49	Madison	5	29 - 70
Brevard	1	1 - 1	Marion	10	1 - 10
Calhoun	6	4 - 25	Nassau	8	8 - 69
Citrus	7	0 - 2	Okaloosa	8	1 - 26
Clay	6	2 - 19	Orange	5	0 - 1
Columbia	7	5 - 61	Osceola	1	0 - 0
Dixie	7	1 - 29	Pasco	2	0 - 1
Duval	6	4 - 16	Pinellas	2	0 - 0
Escambia	6	3 - 50	Polk	13	0 - 3
Flagler	4	1 - 20	Putnam	8	1 - 5
Franklin	6	- - -	Santa Rosa	10	1 - 52
Gadsden	6	5 - 78	Seminole	1	1 - 1
Gilchrist	2	5 - 5	St. Johns	7	1 - 26
Gulf	4	0 - 10	Sumter	2	0 - 0
Hamilton	6	42 - 73	Suwanee	7	14 - 84
Hernando	6	0 - 12	Taylor	11	2 - 58
Hillsboro	3	0 - 0	Union	3	6 - 57
Holmes	6	47 - 82	Volusia	8	0 - 3
Jackson	9	32 - 76	Wakulla	5	7 - 46
Jefferson	4	70 - 94	Walton	11	5 - 60
Lafayette	7	15 - 47	Washington	7	15 - 65
Lake	6	0 - 1			

The map included with the report shows areas of infection intensity. The only areas of concern are limited to relatively small areas in the northernmost tier of counties. Some of the plantations sampled in the southernmost counties were free of any infection. Highest infection was 94 percent in Jefferson County. Generally speaking, the areas where infection is over 50 percent, are very limited.

LITERATURE CITED

(1) Goddard, R.E. and Strickland, R.K. 1970. Cooperative forest forest genetics research program. Twelfth Progress Report, University of Florida, School of Forestry. Research Report No. 18.

(2) Lamb, H. and Sleeth, B. 1940. Distribution and suggested control measures for the southern pine fusiform rust. Southern Forest Experiment Station Occasional Paper No. 91.

(3) Yandle, D.O. and Roth, E.R. 1971. Ratio estimation of fusiform rust incidence in southern pine plantations. Forest Science, Vol. 17 (1): 135-142.

More detailed information can be obtained by contacting the Forest Pest Management Group Field Offices listed below or the Atlanta Office:

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